IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants	:	Zachary J. Mason
Appl. No.	:	10/684,313
Filed	:	October 13, 2003
For	:	PREDICTIVE ANALYSIS OF BROWSE ACTIVITY DATA OF USERS OF A DATABASE ACCESS SYSTEM IN WHICH ITEMS ARE ARRANGED IN A HIERARCHY
Examiner	:	Dangelino N. Gortayo
Confirmation No.	:	3315

APPEAL BRIEF

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Sir:

This Appeal Brief is responsive to the Final Office Action delivered electronically and having a notification date of April 10, 2007 (the "current Office Action").

The current Office Action rejects Claims 1-10 and 15-16 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,606,619 B2 issued to Ortega et al. ("Ortega") in view of U.S. Patent No. 6,460,036 B1 issued to Herz ("Herz"). The current Office Action further rejects Claims 11-14 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,693,867 B2 issued to Ford et al. ("Ford"). The current Office Action further rejects Claims 2, 3, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Ortega in view of Herz and further in view of Ford.

I. REAL PARTY IN INTEREST

The real party in interest in the present application is Amazon.com, Inc.

II. RELATED APPEALS AND INTERFERENCES

No related appeals or interferences are pending.

III. STATUS OF CLAIMS

Claims 1-16 are currently pending in the application, and are attached hereto as an appendix.

All of the pending claims were finally rejected in the current Office Action having a notification date of April 10, 2007, and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments have been made in response to the current Office Action.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present application includes three independent claims. Each independent claim is paraphrased below, with citations to corresponding portions of the specification and drawings as required by 37 C.F.R. § 41.37(c)(1)(v). These citations are provided in order to illustrate specific examples and embodiments of the recited claim language, and not to limit or interpret the claims. A citation to a specific paragraph or appendix in the following claim summaries should be treated as a citation to all lines of that paragraph or appendix.

Claim 1 is directed to a computer-implemented method of analyzing browse activity data of users of a database access system (*see e.g.*, page 5, ¶¶ 21-22). The method of Claim 1 comprises:

- providing a browse tree (*see e.g.*, Fig. 1, element **100**; pages 3-4, ¶ 16) in which items represented within a database (*see e.g.*, Fig. 1, elements **I1-I9**; page 4, ¶¶ 17-19) are arranged within item categories over multiple levels of item categories (*see e.g.*, Fig. 1, elements **C1-C5**; page 4, ¶¶ 17-18);

- assigning individual user history scores to specific categories of the browse tree based at least in-part on an item selection history of a user, wherein the individual user history scores represent the user's predicted affinities for the corresponding item categories (*see e.g.*, Figure 3, element **360**; page 10, ¶ 37; page 11, ¶ 40, Table 3);
- assigning collective user history scores to specific categories of the browse tree based at least in-part on item selection histories of a population of users, wherein the collective user history scores represent the predicted affinities of the user population for the corresponding item categories (*see e.g.*, page 10, ¶ 38; pages 11-12, ¶ 41, Table 4); and
- evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, the relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category (*see e.g.*, Figure 4, element **460**; page 13 , ¶ 45).

Claim 11 is directed to a method of distributing credit for a selection event among the nodes of a browse tree (*see e.g.*, Figures 1 and 3; page 10, ¶ 37). The method of Claim 11 comprises:

- determining a total amount of credit to be distributed for the selection event in which a user selected an item within the browse tree (see e.g., Figure 3, element **330**; page 10, ¶ 37);
- identifying each ancestor node of the selected item within the browse tree (*see e.g.*, Figure 3, element **340**; page 10, ¶ 37);
- dividing said total amount of credit by the number of ancestor nodes of the selected item to determine an amount of credit per ancestor to be distributed for the selection event (*see e.g.*, Figure 3, element **350**; page 10, ¶ 37); and
- assigning said amount of credit per ancestor to the ancestor nodes of the selected item within the browse tree (*see e.g.*, Figure 3, element **360**; page 10, ¶ 37).

Claim 15 is directed to a database access system (*see e.g.*, Figure 2, element **210**; page 7, ¶ 28). The system of Claim 15 comprises:

- a server system (*see e.g.*, Figure 2, element **220**; page 7, ¶ 28) coupled to a communications network (*see e.g.*, Figure 2, element **240**; page 7, ¶ 28), said server system providing access to a browse tree in which items represented within a database are arranged within a hierarchy of item categories over multiple levels of item categories (*see e.g.*, Figure 2, element **250**; pages 7-8, ¶¶ 28-29), said server system configured to maintain item selection histories for each user within a population of users (*see e.g.*, Figure 2, element **260**; pages 7-8, ¶¶ 28-29);
- an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree (*see e.g.*, Figure 2, element **280**; pages 7-8, ¶¶ 28 and 30-31), wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories (*see e.g.*, page 8, ¶ 32; Figure 4, element **460**; page 13, ¶ 45); and
- a recommendation module coupled to the server system and configured to access the relative preference profile of the user to make personalized recommendations to the user based at least in-part on the relative preference profile (*see e.g.*, Figure 2, element **270**; page 7, ¶ 28; page 8-9, ¶¶ 32-34).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following rejections are to be reviewed on appeal:

1. The rejection of Claims 11-14 under 35 U.S.C. § 102(e) as being anticipated by Ford.

2. The rejection of Claims 1-10 and 15-16 under 35 U.S.C. § 103(a) as being unpatentable over Ortega in view of Herz.

3. The rejection of Claims 2, 3, and 16 under 35 U.S.C. § 103(a) as being unpatentable over Ortega in view of Herz and further in view of Ford.

For purposes of this appeal, Appellant will treat Ortega, Hertz, and Ford as prior art. Appellant reserves the right to later disqualify one or more of these references as prior art. Also, to the extent that Appellant declines to present argument herein with respect to some of the

pending dependent claims, Appellant does not imply that the limitations added by such dependent claims are disclosed or suggested by the references relied upon in the current Office Action.

VII. ARGUMENT

A. The Rejections of Claims 11-14 Under 35 U.S.C. § 102(e) as Being Anticipated By Ford Are Improper

For the reasons set forth below, Appellant respectfully submits that the anticipation rejections of Claims 11-14 based on Ford are improper.

Ford does not disclose a method for distributing credit for a selection event among the nodes of a browse tree, comprising:

> determining a total amount of credit to be distributed for the selection event in which a user selected an item within the browse tree;
>
> identifying each ancestor node of the selected item within the browse tree;
>
> dividing said total amount of credit by the number of ancestor nodes of the selected item to determine an amount of credit per ancestor to be distributed for the selection event; and
>
> assigning said amount of credit per ancestor to the ancestor nodes of the selected item within the browse tree.

The rejection of Claim 11 is improper because, among other reasons, Ford does not disclose "identifying each ancestor node of the selected item within the browse tree." The Office Action asserts that this limitation is disclosed in Ford at col. 20, ll. 11-21. (*See* current Office Action at 2 ("wherein items are in categories, with a top level category").) The cited excerpt discloses that one disclosed method of Ford determines, in response to a search query, the top matches (i.e. items) from a prioritized list that satisfy the search query. The top matches (items), up to a maximum of three, become the "top-level" matches (items) for each category of a number of top-level categories. The current Office Action appears to assert that these matches (items) correspond to the ancestor nodes of Claim 11. This is incorrect. The top-level matches are determined by a search algorithm processing a search query input by the user. The top-level matches are not determined in connection with a selection event. The ancestor nodes in Claim 11,

on the other hand, are determined by the geometry of the browse tree as it relates to the item associated with a selection event.

The rejection of Claim 11 is also improper because Ford does not disclose "dividing said total amount of credit by the number of ancestor nodes of the selected item to determine an amount of credit per ancestor to be distributed for the selection event." Instead, Ford teaches that all of the credit for a selection event for an item is allocated only to that item, and not to a number of different ancestor nodes of a browse tree. Fig. 7 of Ford, for example, shows that each item (element **754**) has an associated Popularity Score **756**. (*See* Ford at Fig. 7.) The Popularity Score **756** is accrued from user selection events for the item. (Ford at col. 18, ll. 24-32.) The current Office Action asserts that Ford discloses this claim limitation at col. 21, ll. 58-67; col. 22, ll. 49-57; and col. 23, ll. 54-62. (*See* current Office Action at 2.) This is incorrect. The cited portions of Ford teach methods, in response to a search query, through which the most popular items responsive to the query within each of a number of categories may be used to prioritize those categories. Importantly, the Ford methods cited in the current Office Action result from a user conducting a search, and not from a user engaged in a selection event. Indeed, the current Office Action concedes this fact. (*See* Office Action at 11.) As such, the cited methods in Ford do not distribute or allocate credit to multiple nodes of a browse tree in response to a selection event, but instead generate search results based on historical selection events. One of the cited Ford methods does include division. (*See* Ford at col. 22, ll. 49-57.) However, in that method the dividend is a cumulative Popularity Score (not a total amount of credit to be distributed for a selection event) and the divisor is a number of different items (not a number of ancestor nodes of an item associated with a selection event).

The rejection of Claim 11 is further improper because Ford does not disclose "assigning said amount of credit per ancestor to the ancestor nodes of the selected item within the browse tree." The Office Action asserts that this claim limitation is disclosed at col. 23, ll. 14-30. (*See* current Office Action at 3.) The cited portion of Ford discusses a method for prioritizing categories based on cumulative Popularity Scores. (*See* Ford at Fig. 8.) As discussed above, these methods occur in connection with a search query, and not in connection with a selection

event. The cited methods in Ford do not distribute or allocate credit to multiple nodes of a browse tree in response to a selection event.

The current Office Action reads the "categories" of Ford as "being the ancestor of a group of related items." (*See* Office Action at 11.) This is improper for several reasons. First, no credit from a selection event is ever allocated to the "categories" in Ford. Second, Claim 1 relates to ancestors of ***an item*** associated with a selection event, and not with ancestors of a "group of related items." Thus, the interpretation adopted in the current Office Action improperly redefines the claim language. The current Office Action also implicitly redefines an ancestor node to an item to include wholly different items. (*See* Office Action at 11 (reading "dividing said total amount of credit by the number of ancestor nodes" on Ford's teaching of dividing a category popularity score by a number of different items).) This is inconsistent with Figure 1 of the present application, and with the text describing Figure 1.

Claims 12-14 each depend directly from independent Claim 11 and are not anticipated by Ford for at least the same reasons provided above for Claim 11.

For at least the above reasons, Appellant respectfully submits that the anticipation rejections of Claims 11-14 based on Ford are improper.

B. The Rejections of Claims 1-10 and 15-16 Under 35 U.S.C. § 103(a) as Being Unpatentable Over Ortega In View of Herz Are Improper

For the reasons set forth below, Appellant respectfully submits that the obviousness rejections of Claims 1-10 and 15-16 based on Ortega in view of Herz are improper.

1. Claim 1

Claim 1 recites as follows:

> 1. A computer-implemented method of analyzing browse activity data of users of a database access system, the method comprising:
>
> providing a browse tree in which items represented within a database are arranged within item categories over multiple levels of item categories;
>
> assigning individual user history scores to specific categories of the browse tree based at least in-part on an item selection history of a user, wherein the individual user history scores represent the user's predicted affinities for the corresponding item categories;

assigning collective user history scores to specific categories of the browse tree based at least in-part on item selection histories of a population of users, wherein the collective user history scores represent the predicted affinities of the user population for the corresponding item categories; and

evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category.

Regarding Claim 1, the current Office Action concedes that Ortega does not teach "evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category." (*See* Office Action at 4.) However, the current Office Action asserts that this limitation is taught or suggested by Herz at Figure 12 (reference 1205), and at col. 18, ll. 49-55; col. 19, l. 17 – col. 20, l. 55; and at col. 27, l. 60 – col. 28, l. 19. This is incorrect.

Herz teaches methods for assessing a user's interest in target objects in a database. Importantly, Herz makes a distinction between target objects that the user has actually evaluated and target objects that the user has had no opportunity to evaluate. For target objects that have been evaluated by the user, Herz teaches the use of "***relevance feedback***," which assesses the user's interest based on "active" and "passive" feedback from the user. In "active" feedback, the user evaluates the object and explicitly indicates his or her interest in that object (e.g., by rating it on a numerical scale). (Herz at col. 17, ll. 39-43.) In "passive" feedback, the system of Herz infers the user's interest from the user's behavior (e.g., by viewing the object on a web page). (Herz at col. 17, ll. 43-58.) Through the use of this active and/or passive relevance feedback, the system of Herz directly determines the user's interest in the evaluated objects.

For target objects for which the user has had no opportunity to evaluate, there is no relevance feedback, and the system of Herz necessarily uses a different, and far more complicated, approach. For an unevaluated target object, Herz estimates the user's interest by calculating the sum of two theoretical quantities, *q*, the "intrinsic quality" of the object and *f*, the "topical interest" of the user in the object. (Herz at col. 18, ll. 49-55.) Thus, the user interest in the unevaluated object is given by: *user interest* = $q + f$. Each of these theoretical quantities is assumed to vary with user and to vary with target object. The intrinsic quality, *q*, takes into account that a given target object is expected to have an intrinsic nature that makes it more (or less) interesting to users generally. (Herz at col. 18, ll. 49-55; Figure 12 at steps **1201-1203**.) The topical interest, *f*, takes into account that the interest of a particular user for the target object may vary from the general interest represented by the theoretical quantity *q*. The Herz system estimates *f* for the unevaluated target object by interpolating from the *f* values determined for ***other target objects that have been evaluated*** (i.e. for which relevance feedback exists) weighted by the similarity between the unevaluated object and the evaluated objects. (Herz at col. 19, l. 18 – col. 20, l. 55; Figure 12 at steps **1204-1205**.) Furthermore, Herz's estimation of an *f* value for a particular user for an unevaluated target object relies on relevance feedback from ***all users***, not just the particular user of interest. (*Id.* at col. 19, ll. 18-42.) Indeed, this point is emphasized in Step **1205** of Figure 12, which is relied on by the current Office Action. (*Id.* at Fig. 12, Step **1205**: "Compute Topical Interest Of Target Object For Selected User Based On Relevance Feedback From All Users"). Importantly, Herz does ***not*** calculate the topical interest *f* by evaluating the difference between the relevance feedback for a particular user for the target object and the relevance feedback from a population of users for that target object. Instead, an interpolation is done on the function $f(V,Y)$, which takes into account the *f* value for ***all*** evaluated objects (V) and for ***all*** users (Y). (*Id.* at col. 19, ll. 34-42.)

To summarize, the Herz system uses two distinct approaches to determining an individual user's predicted interest in a target object. When the user has evaluated the object, the user's interest is directly assessed from the user's relevance feedback, with no analysis of the general population's interest in the object. When the user has not evaluated the object, the user's interest is estimated from an interpolation that considers the expressed interests of all users in all objects

(in the form of relevance feedback), with no analysis of the particular individual's historical interest in the object (which is, of course, nonexistent). In neither case is a differencing carried out between the relevance feedback (e.g. click and browse behavior) of an individual user and the relevance feedback of a population of users.

Accordingly, there is no teaching or suggestion in Herz of "evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category." To the contrary, Herz teaches that the individual user's relevance feedback (e.g., click and browse behavior) for a target object is, when available, ***by itself*** the most reliable information for assessing a user's interest in the target object. (*Id.* at col. 17, l. 29 – col. 18, l. 27.) It is only when this direct evidence of interest (the relevance feedback) is unavailable that Herz falls back on using a weaker indirect approach (interpolation over all users and all objects) that merely estimates user interest in the target object. (*Id.* at col. 18, l. 28 – col. 20, l. 55.) In this latter situation, there is no history score for the individual user for that target object, and thus there can be no differencing of the individual's (nonexistent) history score with a population of user's history scores.

The current Office Action interprets the topical interest, *f*, of the Herz system as corresponding to the recited "relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category" of the present invention. This is incorrect. First, pending Claim 1 expressly recites that the relative preference profile is generated by "evaluating differences between the individual user history scores and the collective user history scores." As discussed above, Herz never evaluates differences between individual history scores and collective history scores. Second, Claim 1 expressly recites that the relative preference profile predicts "affinity for a ***category***." The topical interest, *f*, reflects interest in target ***objects***, not interest in categories. Herz does disclose grouping objects into "clusters," (Herz at col. 65, ll. 9-56) and also discloses assessing user interest in clusters (*id.* at col. 69, ll. 33-28). Herz makes clear, however, that this assessment is

made by measuring how often the user accesses target objects in the cluster (i.e. from relevance feedback from the user) or by predicting user interest "using the methods disclosed herein for estimating interest from relevance feedback." (*Id.* at col. 69, ll. 25-28.) As discussed at length above, those methods do not disclose or suggest evaluating differences between individual user history scores and collective user history scores.

Furthermore, the combination of Ortega and Herz does not result in the method of Claim 1. Claim requires evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user. Herz teaches away from this approach, disclosing instead that the user's active or passive relevance feedback for the user, and the user alone, is used to determine the interest of a target object, with no examination of, or comparison to, the behavior of a general population of users. (*See* Herz at col. 17, ll. 39-58.)

The current Office Action further asserts that Herz teaches that user profiles are compiled not only from user history, but can also be collected from user collected data through a "rapid profiling process, providing a user with a history to be used in comparison with other users." (*See* Office Action at 12.) This disclosure in Herz merely states that a new user (for which there is little or no data), X, will be treated like similar users having data, Y, when estimating the theoretical function $f(V,Y)$, which takes into account the f value for ***all*** evaluated objects (V) and for ***all*** users (Y). None of this impacts the discussion above, which explains why the teaching in Herz of theoretical f and q factors does not correspond to the method of Claim 1.

The current Office Action further asserts that motivation exists for combining Ortega and Herz "to improve upon a recommendation system to be more precise and comprehensive in representing a user's taste." (*See* Office Action at 5.) However, because Ortega and Herz each teach the same general approach to determining interest in a target object (assessing the user's historical behavior in connection with the object), the combination system would not be more precise or comprehensive in representing a user's taste. Thus, the current Office Action has not identified a proper reason for combining the teachings of Ortega and Herz. As recently articulated by the Supreme Court, "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art."

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007). "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.*

In summary, the obviousness rejection of Claim 1 is improper because (1) the combination of Ortega and Herz does not teach or suggest all of the limitations of Claim 1, and (2) the current Office Action does not identify a valid reason for combining Herz and Ortega.

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 1 based on Ortega in view of Herz is improper.

2. Claim 2

Claim 2 depends from independent Claim 1 and is not obvious over Ortega in view of Herz for at least the same reasons as provided above for Claim 1. Furthermore, the current Office Action provides no bases for finding Claim 2 obvious over Ortega in view of Herz. For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 2 based on Ortega in view of Herz is improper.

3. Claim 3

Claim 3 depends from Claim 2 and is not obvious over Ortega in view of Herz for at least the same reasons as provided above for Claim 2. Furthermore, the current Office Action provides no bases for finding Claim 3 obvious over Ortega in view of Herz. For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 3 based on Ortega in view of Herz is improper.

4. Claims 4-10

Claims 4-10 depend either directly or indirectly from Claim 1 and are not obvious over Ortega in view of Herz for at least the same reasons as provided above for Claim 1. For at least the above reasons, Appellant respectfully submits that the obviousness rejections of Claims 4-10 based on Ortega in view of Herz are improper.

5. Claim 15

Claim 15 recites as follows:

15. A database access system comprising:

a server system coupled to a communications network, said server system providing access to a browse tree in which items represented within a database are

arranged within a hierarchy of item categories over multiple levels of item categories, said server system configured to maintain item selection histories for each user within a population of users;

an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree, wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories; and

a recommendation module coupled to the server system and configured to access the relative preference profile of the user to make personalized recommendations to the user based at least in-part on the relative preference profile.

Regarding Claim 15, the current Office Action concedes that Ortega does not teach "an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree, wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories." (*See* Office Action at 7.) However, the current Office Action asserts that this limitation is taught or suggested by Herz at Figure 12 (reference 1205), and at col. 18, ll. 49-55; col. 19, l. 17 – col. 20, l. 55; and at col. 27, l. 60 – col. 28, l. 19). The bases provided in the current Office Action for rejecting Claim 15 for obviousness appear to be identical to the bases provided in connection with Claim 1.

There is no teaching or suggestion in Herz of "an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree, wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories."

Regarding Claim 15, the current Office Action repeats the same assertion regarding Herz's disclosure of a "rapid profiling process" that it makes in connection with Claim 1. (*See* Office

Action at 14.) Yet the disclosure of a rapid profiling process is immaterial to Claim 15 for the same reasons as it is immaterial to Claim 1.

Furthermore, as discussed above, the current Office Action has not identified a reason for combining the teachings of Ortega and Herz. The current Office Action has also failed to identify a reason for identifying the teachings of Ortega and Herz.

In summary, the obviousness rejection of Claim 15 is improper both because (1) the combination of Ortega and Herz does not teach or suggest all of the limitations of Claim 15, and (2) the current Office Action does not identify a valid reason for combining Herz and Ortega.

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 15 based on Ortega in view of Herz is improper.

6. Claim 16

Claim 16 recites:

> 16. The system of Claim 15, wherein the analysis module calculates the user's predicted affinities for the specific item categories based at least in-part by distributing an amount of credit associated with an item selection event among a plurality of item categories under which the selected item falls within the browse tree

Claim 16 depends directly from independent Claim 15 and is not obvious over Ortega in view of Herz for at least the same reasons as provided above for Claim 15. Furthermore, the current Office Action provides no bases for finding Claim 16 obvious over Ortega in view of Herz. Also, the combination of Ortega and Herz does not teach or suggest "wherein the analysis module calculates the user's predicted affinities for the specific item categories based at least in-part by distributing an amount of credit associated with an item selection event among a plurality of item categories under which the selected item falls within the browse tree."

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 16 based on Ortega in view of Herz is improper.

C. The Rejections of Claims 2, 3, and 16 Under 35 U.S.C. § 103(a) as Being Unpatentable Over Ortega In View of Herz and Further In View of Ford Are Improper

For the reasons set forth below, Appellant respectfully submits that the obviousness rejections of Claims 2, 3 and 16 based on Ortega in view of Herz and further in view of Ford are improper.

1. Claim 2

Claim 2 depends from independent Claim 1. The current Office Action concedes that the combination of Ortega and Herz does not teach the limitations of Claim 2. (*See* Office Action at 8.) The current Office Action asserts that the limitations in Claim 2 are met by Ford. However, the current Office Action does not assert that Ford discloses or suggests the limitations of Claim 1 that it concedes are missing in Ortega. Indeed, Ford does not disclose or suggest "evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category." Accordingly, for the reasons discussed above in connection with Claim 1, the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 1. It further follows that the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 2.

Furthermore, as discussed above, the current Office Action has not identified a reason for combining the teachings of Ortega and Herz. The current Office Action has also failed to identify a reason for identifying the teachings of Ortega, Herz, and Ford.

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 2 based on Ortega in view of Herz and further in view of Ford is improper.

2. Claim 3

Claim 3 depends from independent Claim 1. The current Office Action concedes that the combination of Ortega and Herz does not teach the limitations of Claim 3. (*See* Office Action at 8.) The current Office Action asserts that the limitations in Claim 3 are met by Ford. However, the current Office Action does not assert that Ford discloses or suggests the limitations of Claim 1 that it concedes are missing in Ortega. Indeed, Ford does not disclose or suggest "evaluating

differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category." Accordingly, for the reasons discussed above in connection with Claim 1, the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 1. It further follows that the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 3.

Furthermore, as discussed above, the current Office Action has not identified a proper reason for combining the teachings of Ortega, Herz, and Ford.

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 3 based on Ortega in view of Herz and further in view of Ford is improper.

3. Claim 16

Claim 16 depends from independent Claim 15. The current Office Action concedes that the combination of Ortega and Herz does not teach the limitations of Claim 16. (*See* Office Action at 9.) The current Office Action asserts that the limitations in Claim 16 are met by Ford. However, the current Office Action does not assert that Ford discloses or suggests the limitations of Claim 15 that it concedes are missing in Ortega. Indeed, Ford does not disclose or suggest "an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree, wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories." Accordingly, for the reasons discussed above in connection with Claim 15, the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 15. It further follows that the combination of Ortega, Herz, and Ford does not teach or suggest each and every limitation of Claim 16.

Furthermore, as discussed above, the current Office Action has not identified a proper reason for combining the teachings of Ortega, Herz, and Ford.

For at least the above reasons, Appellant respectfully submits that the obviousness rejection of Claim 16 based on Ortega in view of Herz and further in view of Ford is improper.

VIII. CONCLUSION

For the reasons set forth above, Appellant respectfully submits that the rejections of Claims 1-16 are improper and should be reversed. Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 5, 2007

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CLAIMS APPENDIX

1. A computer-implemented method of analyzing browse activity data of users of a database access system, the method comprising:

providing a browse tree in which items represented within a database are arranged within item categories over multiple levels of item categories;

assigning individual user history scores to specific categories of the browse tree based at least in-part on an item selection history of a user, wherein the individual user history scores represent the user's predicted affinities for the corresponding item categories;

assigning collective user history scores to specific categories of the browse tree based at least in-part on item selection histories of a population of users, wherein the collective user history scores represent the predicted affinities of the user population for the corresponding item categories; and

evaluating differences between the individual user history scores and the collective user history scores to generate a relative preference profile for the user, wherein the relative preference profile comprises relative preference scores for specific item categories, said relative preference scores reflecting a degree to which the user's predicted affinity for a category differs from the predicted affinity of the user population for that category.

2. The method of Claim 1, wherein assigning individual user history scores to specific categories comprises:

(a) determining an amount of credit to be distributed for an item selection event in which the user selected an item; and

(b) distributing said amount of credit among the item categories under which the item falls, including item categories at multiple levels of the browse tree.

3. The method of Claim 2, further comprising repeating (a) and (b) for each of a plurality of selection events while summing credit values assigned to like item categories.

4. The method of Claim 1, wherein evaluating differences between the individual user history scores and the collective user history scores comprises calculating at least one of a relative

entropy function, a dot product function, or a sum of squares function of the individual user history scores relative to the collective user history scores.

5. The method of Claim 1, further comprising providing personalized item recommendations to the user based at least in-part on the relative preference profile.

6. The method of Claim 1, further comprising providing personalized category recommendations to the user based at least in-part on the relative preference profile.

7. The method of Claim 1, wherein the item selection history of the user comprises a history of items selected for downloading.

8. The method of Claim 1, wherein the item selection history is based solely on the user's selections of items during browsing of the browse tree.

9. The method of Claim 1, further comprising incrementally updating the relative preference profile of the user in response to new item selection events of the user.

10. The method of Claim 9, wherein the relative preference profile is updated substantially in real-time as the user interacts with the browse tree.

11. A method of distributing credit for a selection event among the nodes of a browse tree, the method comprising:

determining a total amount of credit to be distributed for the selection event in which a user selected an item within the browse tree;

identifying each ancestor node of the selected item within the browse tree;

dividing said total amount of credit by the number of ancestor nodes of the selected item to determine an amount of credit per ancestor to be distributed for the selection event; and

assigning said amount of credit per ancestor to the ancestor nodes of the selected item within the browse tree.

12. The method of Claim 11, wherein said total amount of credit is the same for all selection events.

13. The method of Claim 11, wherein said total amount of credit varies based on the nature of the selection event.

14. The method of Claim 11, wherein the selection event comprises viewing an item and said total amount of credit varies based on the amount of time spent viewing the item.

15. A database access system comprising:

a server system coupled to a communications network, said server system providing access to a browse tree in which items represented within a database are arranged within a hierarchy of item categories over multiple levels of item categories, said server system configured to maintain item selection histories for each user within a population of users;

an analysis module which analyzes at least the item selection histories to predict user affinities for specific item categories of the browse tree, wherein the analysis module additionally generates a relative preference profile for a given user by calculating differences between the user's predicted affinities for specific item categories of the browse tree and the population's predicted affinities for said item categories; and

a recommendation module coupled to the server system and configured to access the relative preference profile of the user to make personalized recommendations to the user based at least in-part on the relative preference profile.

16. The system of Claim 15, wherein the analysis module calculates the user's predicted affinities for the specific item categories based at least in-part by distributing an amount of credit associated with an item selection event among a plurality of item categories under which the selected item falls within the browse tree.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None

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